

**M**agnetic cards are the latest development in media that serve as the recording and playback units for automatic typewriters. Designed for use with the IBM Magnetic Card "Selectric" Typewriter, they combine the reusability of magnetic tape with the flexibility and simplified handling that are afforded by individual cards.

In short, the advent of magnetic cards is a welcome alternative for law firms that find the IBM Magnetic Tape "Selectric" Typewriter (MT/ST) impractical for their everyday use. See Allen, *Law-Office Typing with the IBM*

*MT/ST, THE PRACTICAL LAWYER*, Apr. 1970, p. 13.

#### AN ALTERNATIVE TO MAGNETIC TAPE

Because the magnetic tape used by the MT/ST is permanently sealed in a plastic cartridge, the material recorded on it must be identified by a "search code," and a separate operator's log must be maintained to keep track of its location. In comparison, magnetic cards can be kept together with their related sheets of typed copy.

The card and paper can be passed around the office as a unit and can be filed together. (When not being

EDITOR'S NOTE: This is the sixth in a recent series of articles in *THE PRACTICAL LAWYER* on the application of automatic typing in the modern law firm. The previous articles include *Law-Office Typing with the IBM MT/ST*, by Louis C. Allen, Jr.—April 1970, p. 13; and the following other articles by Mr. Sternin: *How To Automate Law-Office Typing—A Step-by-Step Approach*—May 1968, p. 69; *Programmed Letterwriting for a Personal Injury Practice*—Dec. 1968, p. 45; *Edge-Punched Cards—The Input Unit for Automatic Typing*—April 1969, p. 48; and *Punched Paper Tape—Another Input Unit for Automatic Typing*—Nov. 1969, p. 54.



ILLUSTRATION 1. An IBM magnetic card with its accompanying typed copy.

used in the machine, the card is kept in an individual cardboard jacket or folder. See Illustration 1.)

Consequently, storage is far more flexible and retrieval much simpler than with magnetic tape. If you have the typed copy, the card is with it; there is no tape cartridge to be obtained, affixed to the machine, and searched.

Magnetic cards have the advantage of index cards in that each stands on its own as a separate unit. This makes them suitable for firms that wish to develop multi-paragraph approaches for typing legal materials that are used over and over again. See, e.g., Sternin,

*How To Automate Law-Office Typing—A Step-by-Step Approach*, THE PRACTICAL LAWYER, May 1968, p. 69; *Programmed Letterwriting for a Personal Injury Practice*, THE PRACTICAL LAWYER, Dec. 1968, p. 45.

Modification of any one card does not affect others. New cards may be added and old ones redrawn or eliminated at any point in the programmed system, without limit.

Firms that have diversified applications for automatic typewriters, as distinguished from fixed, narrowly limited ones, will find magnetic cards *far* more flexible than tape. For use as an aid in revising dictation, secretaries will find the magnetic cards preferable to tape, since each dictated job can be separately recorded and stored more easily on cards.

If case data, such as names, addresses, and caption boxes are to be recorded, cards are the only workable approach, since these items are used in random order. Furthermore, typists will be surprised at how much simpler it is to use the Magnetic Card "Selectric" than the MT/ST.

This article will describe, in general, how the Magnetic Card "Selectric" Typewriter and magnetic cards work, how they can be used in the production of law office paperwork, and how they compare to other media (including edge-punched cards and paper tape).

### **Description of the Machine**

The Magnetic Card "Selectric" consists of two units—a typewriter and a card unit.

The typewriter portion, which is placed on a desk or table, is similar to the regular IBM "Selectric" typing unit used in the MT/ST. The type characters are contained on a revolving "ball," instead of swinging keys, and the type-balls are interchangeable to allow a variety of type faces. It can be used separately, without its automatic features, just the same as an ordinary electric typewriter.

The other portion is the card unit, or console, which stands beside the typewriter and is connected to it by a cable. The card unit holds the mag card that is being recorded or played back and has a few related control devices. Most of the controls for automatic typing, however, are on the typewriter itself.

### **RECORDING ON "MAG" CARDS**

Magnetic cards (or "mag" cards) are made of a strong plastic, coated on one side with the same magnetic oxide coating used on the tapes for your home tape recorder. Although they actually measure  $3\frac{1}{4}$  by  $7\frac{3}{8}$  inches, they are often referred to as being three by seven inches. When the term "three-by-seven mag card" is used either here or elsewhere, you may be

fairly certain that the reference is to this recording unit.

As with all other automatic typing, the operator must initially record the various bits of information that will later be used to operate the typewriter. These include codes that correspond not only to letters, numbers, and punctuation, but spacing, tabulation, and every other typing function. Each bit of information is considered a "character," regardless of its nature.

To record material, the operator places one of these mag cards into a slot in the card unit. The cards are clearly marked to indicate which side is up, and the unit will physically expel two or more cards accidentally inserted together.

The operator will next press a button on the typewriter marked "Record" to turn on the recording part of the machine. Thereafter, anything she types on the typewriter will be recorded simultaneously on the card in the card unit.

### **Tracks**

Recording is done across the seven-inch width of the card. The card is treated as having 50 separate tracks, each starting at the three-inch edge and running across the seven-inch width of the card.

Imagine a magnetic card laid horizontally with its seven-inch dimension going across this page. As the operator inserts it into the card unit, the machine is automatically set to begin recording at

the beginning of the first track, which would be at the upper left corner.

As the operator types the first line, it is recorded along the first track, from left to right. When she touches the carrier return key on the typewriter to move to the second line on the paper, the card recorder automatically moves to the beginning of the *second* track on the magnetic card. Thus, the lines of typing on the paper will correspond to the tracks on the recorded magnetic card.

#### *Line Capacity*

Each track is capable of recording 100 characters—which include not only letters and punctuation, but spacing, tabulation, and other codes that operate the typewriter. The average line of typing contains about 60 to 70 characters, so there is ample capacity for each track to hold a typed line.

The extra capacity may be needed if a page is to be typed horizontally or if words are underscored. Underscoring uses three times as many characters as the words themselves: the initially typed words, the backspace codes, and the underscore.

Should the mag card reach the end of a track, there is a warning light and a method for the operator to move to the next track without returning the carriage. However, these are unusual situations, and for the purposes of this article each line of type may be thought of

as being recorded on its own track.

The recording unit has a numeric indicator that shows the operator which track is being recorded. It also enables the operator to select any individual track she chooses for either recording or playback. The line indicator can be seen in Illustration 2, which shows the insertion of a mag card in the card unit.

#### *Corrections*

If the operator makes a mistake while typing, she may backspace and type the correct character. When she does so, the magnetic card in the card unit is correspondingly backspaced and the recording of the new character automatically erases the old.

If the operator does not see the error immediately, she may later go back to the track that contains the mistake and re-record that entire line. The additional capacity of the track will accommodate a correction that extends line length. Just as in the home tape recorder, re-recording erases the prior material automatically.

#### *Special Codes*

The following are some of the special codes the operator may record on the cards:

- A *stop* code. When played back, this will automatically stop the typewriter, enabling the operator to make a manual entry from the ma-



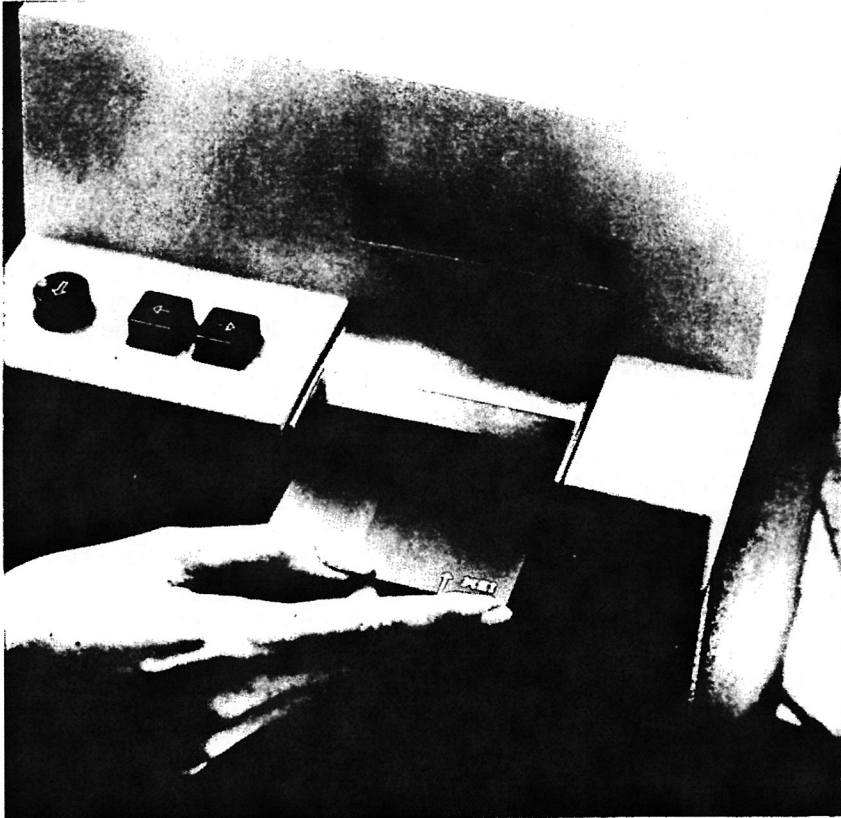


ILLUSTRATION 2. A magnetic card being inserted into the IBM Magnetic Card "Selectric" Typewriter's card unit. The numeric indicator above shows which line (or track) is being recorded or played.

chine's keyboard. This code is particularly important when the operator must add words or choose among alternative language in a form, shift from double space to single, or change to another type style by changing the type-ball.

- A *delete* code, which enables

the operator to block out unwanted characters without retyping anything over them.

- A *card eject* code, which is used at the end of a typing unit to expel the card automatically.

There are also a few other spe-

cial codes, some of which are incidental to special applications that will be mentioned later. These special codes are encoded simply by depressing a code key together with one or another of the keyboard characters, which are appropriately engraved to designate their additional function.

### HOW CARDS ARE PLAYED OUT

Automation begins when the recorded mag cards are later "played," causing the typewriter to retype their contents errorlessly and at extremely high speeds. Although the cards are *recorded* with particular, fixed materials, they may be *used* in many ways:

- By *adding* additional materials;
- By *skipping* words or lines;
- By using only *parts* of a given card; and
- By *combining* cards or parts of cards in varying sequences.

The following description of playout procedures will give some idea of the flexibility afforded by magnetic cards.

#### Insertion of the Card

Playout is effected by inserting the magnetic card into the same slot in the card unit that was used in recording it. Instead of depressing

the "record" key on the typewriter, the operator presses the "play" key (or one of two other keys described below).

Routinely, typing action begins with the first character on the first track. However, if the operator needs to, she can select any of the 50 tracks by using one of two track selector keys—one of which moves the track reading action to the right, the other to the left.

The numbered track indicator moves right or left accordingly, shows her which track she is on, and enables her to stop at the one she wants. This is shown in Illustration 2.

#### Choice of Playout Operations

Unlike the recording process, for which there is only one key, there are *three* different ways of playing out a recorded card. The operator therefore has three keys from which to choose: "Play," "Adjust," or "Skip."

When the "Play" key is used, the typewriter plays out the recorded card exactly as it was recorded, ending the lines and returning the carrier in response to the codes that are encoded in the magnetic card.

#### Adjust

When the "Adjust" key is used, the machine plays out the recorded material in the card, but *does not* end the line and return the carrier in response to the pre-recorded

coding. Instead, that coding is automatically responded to in a different way: a new line is begun when the type-ball reaches a "carriage return zone" at the right margin.

The machine's ability to adjust lines in this manner enables the operator to use a pre-recorded card in a modified way. If materials are added or by-passed, the location of the right margin is, of course, almost always changed.

The machine adjusts for the change by returning the carriage when it senses a *space code* in the right margin zone. (The space code is the code used between words.) If the right margin zone is reached and the machine does not sense a space code after reading a few characters, it stops automatically, thereby allowing the operator to decide whether to hyphenate or to go on to the end of the word.

### *Skip*

The "Skip" key enables the operator to by-pass pre-recorded materials that she does not want typed. When it is pressed, the machine simply goes past certain of the recorded materials. The skipped materials are not erased from the card; they are simply passed over.

### *Playout Mode*

The three playout keys are used in conjunction with one of four other keys, which determine the *mode* of playout. These are: "Char-

acter," "Word," "Line," and "Automatic." Basically, these latter keys control whether the machine is to stop after every character, every word, line, or not at all until a stop code or a card eject code is sensed.

For example, if the "Play" and "Word" keys are chosen, the machine will type a word, then stop. If the "Skip" and "Line" keys are pressed, the machine will skip a line, then stop. If the "Adjust" and "Automatic" keys are used, the machine will type continuously, and will adjust the margin in response to the right marginal zone.

The three playout keys are always used in conjunction with one or another of these four other keys, thereby giving the unit its extremely flexible capabilities, which will be described in the remainder of this article.

## USING MAG CARDS IN LAW-OFFICE TYPING

The Mag Card "Selectric" and its magnetic cards can be put to use in the law office to do many typing jobs. The work generally will fall into two broad categories (which will be separately discussed):

- *Revisionary* typing. Here the equipment is used in connection with work done in draft (or work that, while not initially typed as a draft, is found in need of modification). Magnetic cards are re-

corded as an incident to the initial typing, and are then used to help retype the material in its final form. The magnetic cards are then free to be reused.

- *Repetitive or programmed typing.* This refers to the use of pre-recorded materials—phrases, paragraphs, combinations of paragraphs, and the like, put together in varying combinations and sequences—to type a required document. The magnetic cards are recorded in anticipation of being needed on future occasions, as part of a plan or program. These cards are subject to careful planning, and become a part of the office library of recorded materials. Therefore, they are not free to be reused, unless eliminated from the program.

These applications of magnetic cards in the law office are described in greater detail below.

### REVISIONARY TYPING

It is helpful to consider revisionary typing as being of two kinds. The first is the *single unit item*, where an entire document has been typed and recorded as a single, continuous piece of work. This may be a dictated letter or a simple agreement, will, or pleading that needs to be retyped.

The second kind of revisionary typing is the *multi-unit item*—such as a brief whose various sections will be developed as separate units, or an agreement, will, or

pleading of sufficient complexity to require writing it part by part. What is characteristic here is that the document will be typed and recorded as *separate sections*, some of which will be revised more than others. When all sections are finished, they will be combined to form the final document.

### Single-Unit Revision— A Letter

The dictation of a letter is done in your customary way. Before typing it, however, your secretary places a mag card into the card unit of the Mag Card "Selectric" and presses the "Record" key. While she is typing the letter on pages, each of the characters is simultaneously recorded on the magnetic card. When she is finished, she remits the letter to you for approval or revision.

The letter, envelope, and magnetic card can be conveniently kept together in an "Interdraft" holder, shown in Illustration 3. The unit measures 8½ by 11 inches and has a lip at the left edge, under which the letter and envelope are clipped.

It also has a pocket on its reverse side, which holds the related magnetic card. When the letter is approved and dispatched, both the holder and magnetic card are reused.

### Correction of Draft

During the initial typing of the

letter, errors will be corrected simply by backspacing and striking over the erroneous character with the correct one. In that way, the magnetic card is automatically corrected. The paper in the typewriter, however, will show a strike over.

In practice, therefore, the operator will have to decide whether the letter is likely to be revised and rerun, in which event there is no point in making an erasure and correction on the paper. If it is probable that the letter will be acceptable as initially typed, she will correct the typed copy in her usual way, as well as correcting the magnetic card.

If the typing error is not discovered until the operator has typed considerably past the error, it becomes easier to treat the letter being typed as a draft to be rerun, rather than to attempt to save it by erasing. The operator simply makes the correction on the magnetic card. Using one of the controls on the card unit, she moves the magnetic card back to the line that contains the error, and then retypes and thereby re-records the line.

The literature distributed by IBM suggests that all initial typing be considered draft work and that errors be corrected by backspacing and striking over. Thus, no attempt would be made to erase and possibly use the page initially typed as the original and final copy. If this approach is to be used, the

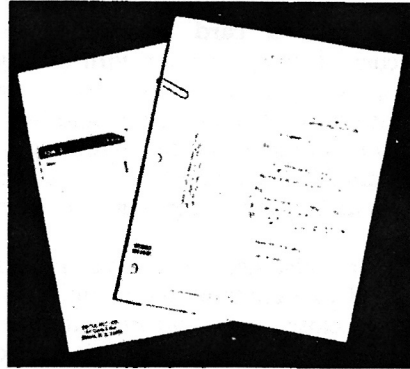


ILLUSTRATION 3. An "Interdraft" holder, with overlap on front for typed copy and pocket on back for a magnetic card, designed so that both may be kept together as a unit.

initial typing is done onto inexpensive second sheets—not onto printed stationery.

If the attorney dictating usually approves his letters as initially typed, and if the machine operator is a fairly good typist, she will probably work on stationery initially, correcting both the magnetic card and the typed copy. Conversely, if the attorney habitually makes many changes, if the typist's ability to produce error-free work is only moderate, or if many carbon copies are involved, then it would be wise to treat every single-unit typing job as a draft initially.

#### *Pre-Recorded Cards as Letterwriting Aids*

Pre-recorded cards may be prepared and saved for later use as an aid in doing letterwriting jobs.

In letterwriting, it is helpful to have a card containing the current date, together with coding that will position it correctly onto a letterhead. Such a card would have to be prepared at the beginning of each day. Of course, the card of the preceding day should be re-recorded on.

It is also helpful to have another card that contains the complimentary close and signature materials. Such a card, once created, is reused indefinitely. If there are several members of the firm, separate letter endings should be prepared for the signatures of each.

Bear in mind that a magnetic card contains 50 tracks and that the operator can locate any one of them easily. Consequently the letter closings for the various members of the firm can be recorded on one card, at different track levels—Mr. A, tracks 1 to 4; Mr. B, tracks 5 to 9; and so forth.

### ***Multi-Unit Revision—***

#### ***A Brief***

Many typing chores, particularly in the legal field, are of lengthy materials whose various parts are subject to a number of revisions. Some parts may be retyped more times than others. Magnetic cards offer a medium by which a sectionalized approach can be taken to this kind of typing. A brief can serve as a good example.

In preparing a brief, some of its sections will be subjected to many

more reruns than others. The statement of fact may require a few revisions. Quotations from the record and citations, if they proofread correctly, will require none. Certain parts of the argument may need many rewrites. Furthermore, you may decide to rearrange the sequence of various sections for clarity or smoother flow of the presentation.

In using magnetic cards for work of this type, the operator records the various parts as separate short sections. Each section is recorded onto its own sheet of paper, and the corresponding recording is made on a separate magnetic card.

Exactly how the final brief will lay out, page by page, is determined only when all the sections have been revised to completion. The sections should be kept short in order to reduce the amount of material involved in the revision of any particular part.

Upon initial typing, any errors can be corrected by backspacing and typing over an erroneous character, or by backtracking and retyping any particular line. Since the initial typing is all in draft, the appearance of the typed page is of no importance.

### ***Storing Card and Copy***

An original and carbon may be made—one for the attorney, the other for the machine operator—or just an original may be made,

and both can work from that. In any event, the magnetic card and a copy should remain physically together so that the operator can conveniently locate the card and know exactly what has been recorded on it.

The "Interdraft" holder, shown in Illustration 3, can be used for this purpose. It is punched to fit the standard three-ring binder, and that is probably the most convenient way to store the various sections.

The pages can be tab indexed, if the job is complex enough to warrant it. Furthermore, the looseleaf approach allows the attorney to rearrange sections freely.

If several attorneys are each working on a separate aspect of the brief, the foregoing approach works well. Each develops his own sections, which are stored in looseleaf books. At the final stages, the sections to be used are chosen, assembled in the sequence wanted, and then typed automatically and errorlessly into final copy.

The magnetic cards are then free to be reused. You may want to save the citations for future brief writing. If so, be sure each is recorded as a separate section onto a separate magnetic card.

#### REPETITIVE OR PROGRAMMED TYPING

The use of magnetic cards for repetitive or "programmed" typing is an approach quite different from revisionary work. This in-

volves the development of *pre-recorded* form materials—phrases, paragraphs, groups of paragraphs, and units of language—that are planned and then recorded, indexed, and stored for later use, to be integrated together in whatever sequences may be needed, to formulate various work products.

These groups of language components are referred to as "programs."

The approach may be thought of as a form book whose paragraphs are recorded onto magnetic cards, allowing their contents to be typed automatically.

The points at which variable entries are made—such as names, dates, descriptions, and the like—are "stop" codes on the magnetic cards. When sensed by the machine, the typewriter stops automatically to allow the operator to type the variable information using the machine's keyboard.

In a larger sense, a program is different from a form book. A program is not a research tool, but rather a device for getting a job done very quickly. Consequently, material infrequently used is ordinarily not included in a program, or might be stored separately.

For a program to be successful, careful attention must be given to the analysis of the components—to their arrangement, their method of storage, and above all, to their *integration*. Integration simply means that any member of the first



group of components must be able to be followed by any member of the next group, and so on down through the remainder of the program.

An example of a notice of motion analyzed to achieve integration of its various component parts was set out in Sternin, *How To Automate Law-Office Typing*, THE PRACTICAL LAWYER, May 1968, pp. 69, 85-88.

### ***Suitability for Programmed Work***

Magnetic cards are exceptionally well suited for use as the recording units of a program. Because they are individual cards, they can be used in any sequence.

Unlike magnetic tape, there is no limit to the number of new units that can be added between existing ones, without requiring any modification of the older cards. Consequently, the programs are internally expandable at any point without limitation.

Furthermore, because the operator can locate any of the 50 tracks, the material encoded on any one of them is subject to internal retrieval. It is possible to design a card in which a series of phrases are recorded on separate tracks, or paragraphs on groups of tracks, and later play out those wanted simply by using the machine's track selector.

The IBM Magnetic Card "Selectric" Typewriter is itself ideally designed for use with programmed

approaches. In addition to its provision for stop coding, it is capable of using a pre-recorded card in modified ways by skipping words and lines. Because it is able to adjust the right margin automatically, it can accommodate any additions or modifications that affect line length.

### ***Storage of Programmed Cards***

A method of storing of the programmed magnetic cards must be employed that will not only identify the cards but also show the operator their entire contents. Remember that the attorney in his dictation will routinely indicate what language is to be added at stop points, which alternatives are to be skipped, and, at times, which pre-recorded language is to have other language substituted for it.

The operator must be able to see what has been recorded on the card in order to follow the dictated instructions. Consequently, the storage method employed must hold both the magnetic cards and a typed copy of the material recorded in them.

Both the cards and the copy may be stored conveniently in looseleaf ring books. Cardholder pages of the "Dekalog" type may be used to hold the magnetic cards, and standard office bond paper may be used to record the typed copy.

"Dekalog" cardholders are card-board holders measuring 8½ by 11 inches. Each contains 10 over-

lapping pockets.

Each pocket will hold a magnetic card in such a way that about three-quarters of an inch of its edge is visible. Its identifying number can be seen at a glance.

Each magnetic card is customarily kept in its own small cardboard folder, and consequently a descriptive notation may be written across the edge, thus providing a verbal identification as well as a numeric one. The storage of these cards in a "Dekalog" holder is shown in Illustration 4.

The "Dekalog" holders are punched to fit standard three-ring looseleaf binders. These books are divided into sections by tab dividers. Each section will consist of one "Dekalog" holder, holding up to 10 magnetic cards, followed by the typed sheets that show the cards' contents.

#### *Advantages of Storage Method*

This simple method of storage offers many advantages:

- The magnetic cards and the sheets showing their contents are permanently together. There is never any need for the operator to go to more than one book to obtain the material she needs to do the job.
- 8½ - by 11-inch sheets are adequate in length to record all the material that a magnetic card can hold.

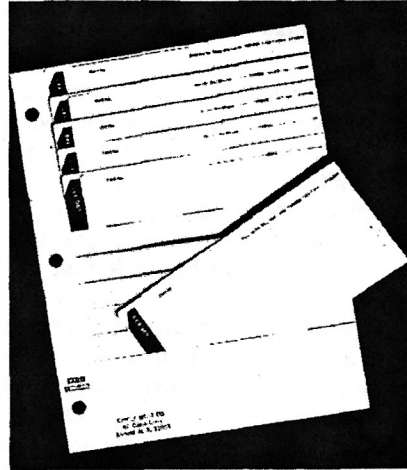


ILLUSTRATION 4. A "Dekalog" cardholder page, shown holding magnetic cards in their individual card folders.

- The cards and their corresponding sheets can be prepared simultaneously. This obvious advantage is easily overlooked. Many storage devices, such as the small jackets that house each magnetic card, cannot be typed upon directly because they are too stiff to go into the typewriter roller and too small to accept double spaced typing. With other storage methods, the magnetic cards may have to be prepared separately and then run single spaced onto labels, which are affixed to the storage device.
- Each cardholder pocket can accommodate more than one magnetic card. Thus, when you have recorded a duplicate card, differing only in gender or in number from the

original, you can store it in the same holder.

- Collateral notations and instructions may be written conspicuously onto the jackets that enclose the magnetic cards or onto the accompanying sheets. For example, in a program for motion practice, a notation might be made that motions in a particular county are heard only on Fridays. Sometimes the material that is to be added at a stop code is extensive and must be spelled out in detail. On occasion, office procedure or court practice may require that certain collateral steps be done. The storage unit is often the ideal spot in which to place a written reminder that will be seen whenever the related magnetic card is used.

- In developing programs, "Dekalog" cardholder pages may be freely intermixed with the "Interdraft" holders. If you are storing a program for wills or trusts, for example, you will have many short paragraphs that store best in cardholder pages; but you may occasionally have a long paragraph running a page or more, which would be more conveniently typed onto 8½- by 11-inch paper and stored in an "Interdraft" holder.

- The storage system is extremely flexible. New sections can be added between existing ones without affecting the others. The looseleaf

approach makes expansion easy, and more books can be added as needed. The storage method is, consequently, internally expandable at any point.

#### *Attorney's Copy of Program*

The attorney will usually have a duplicate program from which he will dictate. His copy should be an exact parallel of the recorded materials. Consequently, the storage method chosen should be one that will accommodate the attorney's copy, and in a way that allows any additions or modifications to be made easily in his copy as well as in the magnetically recorded one.

The method suggested here can store the attorney's materials on blank three- by seven-inch cards in cardholder pages, to parallel those magnetic cards similarly stored, and on standard 8½- by 11-inch paper to parallel those recorded materials stored in "Interdraft" holders.

#### *Developing a Program*

A programmed approach to an area of work requires a good deal of preliminary preparation. In *How To Automate Law Office Typing—A Step-by-Step Approach*, THE PRACTICAL LAWYER, May 1968, p. 69, the author described the use of blank three- by seven-inch cards as a way to organize a proposed program inexpensively and in advance of the purchase of any

equipment.

The material, so arranged, would be perfected in everyday use. The attorney obtains the immediate benefit of a systematic approach to dictation, as well as the advantages of developing something of immense permanent value.

After the language components have been established in this way, conversion to magnetic cards is simple and an assured success. The operator merely transcribes the cards onto magnetic ones, and thereby obtains a parallel set for use at the machine. The original set remains with the attorney for use in dictation.

#### COMPARISON WITH OTHER MACHINES

It is not within the scope of this article to make a detailed comparison between punched paper tape and cards, and magnetic tape and cards. However, it may be helpful toward a better understanding of magnetic cards and the Magnetic Card "Selectric" Typewriter to point out certain differences between that media and machine and the others.

#### Card-Tape Compatibility

A typewriter that uses punched paper tape and edge-punched paper cards can punch and play back *both* of these media on the same machine. However, at the present time, equipment recording on magnetic media will use *either*

tape or cards, but not both on the same machine.

#### Transfer Capability

The Mag Card "Selectric" does not have the capacity to transfer the content of a recorded card onto a blank card. The machine has only one recording "station," and consequently either recording or playback is going on at any one time—not both.

By comparison, machines that use punched paper tape and cards and machines that use magnetic tape have two "stations." Consequently, playout can be going on at one while the content is transferred and recorded, usually with modifications, at the other. However, this is not an important limitation, because of the way in which modifications are made on the magnetic card machine.

The Mag Card "Selectric" handles modifications of recorded material in a simpler way than punched paper tape or magnetic tape machines; consequently, there is little need to transfer the prerecorded contents to another card. Each *line* as recorded on a magnetic card is individually accessible, and may be *individually* changed, simply by being recorded upon.

Because each line of typing or recorded track on the magnetic card has the capacity to hold 100 characters, and since the average typed line contains only about

60, there is almost always enough room to take up any modifications that expand line length. If not, the operator re-records the following line or lines until she "catches up." The equipment automatically adjusts differences in line length.

### Cost

A cost comparison between machines that use punched paper and those that use magnetic media can at best be only a very rough approximation. There will be differences based upon model and features, date of purchase or rental, and perhaps the area of the country. Generally, magnetic machines cost somewhat under \$8,000, punched paper tape and card machines about \$4,000.

The cost of magnetic cards as compared to punched cards is harder to equate because magnetic cards are reusable, unless committed to a permanent assignment. Each magnetic card costs about \$1, bringing the cost to about two cents a line.

Edge-punched cards are not reusable, since they have holes permanently punched through them. Each is capable of recording one line of typing and costs about one cent each, bringing the cost to about a penny a line.

As a rule of thumb, magnetic systems, both in machinery and in recording media, run about double the cost of punched paper systems. The reusability factor of

magnetic materials is one that each office will have to evaluate.

### CONCLUSION

Magnetic cards as a recording medium for automatic typewriting make possible entirely new approaches in processing paperwork. Far more than a machine is being offered here. An entirely new dimension is being developed in the programming of language.

However, more than with any other piece of office equipment, the degree of success will be directly proportionate to the extent of the preparation work expended and to the willingness on the part of office personnel to adapt office procedures, methodology, and work habits to it. The author foresees an entirely new era about to unfold, built around these cards, and strongly urges that attorneys and their secretarial staffs become familiar with this vitally important technology.

### FURTHER INFORMATION

Further information is provided in a booklet, *How To Utilize the Mag Card "Selectric" Typewriter in the Law Office*, which may be obtained from the Information Department, IBM, Office Products Division, 590 Madison Avenue, New York, N.Y. 10022.

Information regarding storage materials may be obtained from Circle West Co., 47 Circle Drive, Elmont, N.Y. 11003.